

CLAIMS

What is claimed is:

1. An image scanner comprising:

a light source;
a calibration strip;
an array of photosensors receiving light, from at least a region near one end of the light source and from a region near the center of the light source, scattered from the calibration strip; and
the calibration strip having a fixed spatial relationship relative to the light source, and relative to the array of photosensors.

2. The image scanner of claim 1, the array of photosensors further comprising photosensors receiving at least two different bands of wavelengths of light.

3. The image scanner of claim 1, the array of photosensors being a first array of photosensors, the image scanner further comprising:

a second array of photosensors receiving light, from the light source, scattered from a scanline.

4. The image scanner of claim 3, further comprising:

outputs from the first array of photosensors being used to modify outputs from the second array of photosensors, during scanning.

5. The image scanner of claim 3, where a native optical sampling rate for the second array of photosensors is different than a native optical sampling rate for the first array of photosensors.

6. The image scanner of claim 3, further comprising a third array of photosensors receiving light, from the light source, scattered from the calibration strip, where photosensors in the third array of photosensors receive a different band of wavelengths of light than the first array of photosensors.

7. The image scanner of claim 3, wherein the first and second arrays of photosensors are on separate integrated circuit die.

8. The image scanner of claim 3, wherein the first and second arrays of photosensors are on separate substrates.

9. An image scanner comprising:

a light source;

a calibration strip;

a first array of photosensors receiving light, from the light source, scattered from the calibration strip;

a second array of photosensors receiving light, from the light source, scattered from a scanline;

the first array of photosensors receiving light from portions of the light source sufficient to enable the first array of photosensors to characterize the light received from the light source over substantially the length of the scanline;

the calibration strip having a fixed spatial relationship relative to the light source, and relative to the first array of photosensors; and

outputs from the first array of photosensors being used to modify outputs from the second array of photosensors, during scanning.

10. The image scanner of claim 9, the first array of photosensors further comprising photosensors receiving at least two different bands of wavelengths of light.

11. The image scanner of claim 9, further comprising a third array of photosensors receiving light, from the light source, scattered from the calibration strip, where photosensors in the first array of photosensors receive a different band of wavelengths of light than the third array of photosensors.

12. The image scanner of claim 9, where a native optical sampling rate for the first array of photosensors is different than a native optical sampling rate for the second array of photosensors.

13. An image scanner, comprising:

a light source;

a calibration strip;

a first array of photosensors;

a second array of photosensors, the second array of photosensors having a fixed spatial relationship relative to the first array of photosensors;

the first and second arrays of photosensors rotatable; _____

wherein at a first rotation position of the first and second arrays of photosensors, the first array of photosensors receives light, from the light source, scattered from the calibration strip, and the second array of photosensors receives light, from the light source, scattered from a scanline; and

wherein at a second rotation position of the first and second arrays of photosensors, the first array of photosensors receives light, from the light source, scattered from the scanline, and the second array of photosensors receives light, from the light source, scattered from the calibration strip.

*Not in drawings (Fig.)
means not discussed
see top of p.17*

14. An image scanner, comprising:

a light source;

a first calibration strip;

a second calibration strip;

*not
shown in Fig. 1 or 2
see p. 11*

a first array of photosensors;

a second array of photosensors, the second array of photosensors having a fixed spatial relationship relative to the first array of photosensors;

the first and second arrays of photosensors capable of being translated in position;

wherein at a first translation position of the first and second arrays of photosensors, the first array of photosensors receives light, from the light source, scattered from the first calibration strip, and the second array of photosensors receives light, from the light source, scattered from a scanline; and

wherein at a second translation position of the first and second arrays of photosensors, the first array of photosensors receives light, from the light source, scattered from the scanline, and the second array of photosensors receives light, from the light source, scattered from the second calibration strip.

15. An image scanner comprising:

- a light source;
 - a first calibration strip;
 - a second calibration strip;
 - a first array of photosensors;
 - a second array of photosensors;
 - an optical path diverter;
- wherein for a first position of the optical path diverter, the first array of photosensors receives light, from the light source, scattered from a scanline, and the second array of photosensors receives light, from the light source, scattered from the first calibration strip; and
- wherein for a second position of the optical path diverter, the first array of photosensors receives light, from the light source, scattered from the second calibration strip, and the second array of photosensors receives light, from the light source, scattered from the scanline.

16. A method of compensation for illumination variation in an image scanner, comprising:

- initiating image scanning, as soon as sufficient illumination is available, without waiting for illumination to stabilize; US 5336976
- monitoring the intensity of the illumination, along substantially the entire length of a scanline, during scanning; and (lamp monitoring array) US 5285293, 6028681
- modifying an output of an imaging array, during scanning, in response to the intensity being monitored. (processor) 524

17. The method of claim 16, further comprising:

- monitoring the color of the illumination, along substantially the entire length of the scanline, during scanning.

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18. The method of claim 16, further comprising:

- measuring, an initial intensity of the lamp, at a position corresponding to a particular pixel on a scanline;
- measuring, at time T, an intensity of the lamp, at the position corresponding to the particular pixel on the scanline, during scanning;
- measuring, at time T, the intensity at the particular pixel on the scanline;
- correcting the intensity of the particular pixel for thermal noise; and
- multiplying the corrected intensity of the particular pixel times the initial intensity of the lamp divided by the intensity of the lamp at time T.

19. The method of claim 18, further comprising:

- correcting the measurement of the initial intensity of the lamp for thermal noise; and
- correcting the measurement of the intensity of the lamp at time T for thermal noise.

20. The method of claim 16, wherein each time the step of monitoring the intensity of illumination is performed, the following step is performed more than one time:
measuring intensity values along a scanline.

21. A method of compensation for illumination variation in an image scanner, comprising:

- initiating image scanning, as soon as sufficient illumination is available, without waiting for illumination to stabilize;
- measuring the intensity of the illumination, a first time, along substantially the entire length of a scanline, during scanning;
- storing outputs of an imaging array for multiple scanlines; 5572335
- measuring the intensity of illumination, a second time, along substantially the entire length of a scanline, during scanning;
- computing interpolated intensity values between the first and second measurements of the intensity of illumination; and
- using the interpolated intensity values to modify the stored outputs of the imaging array.